

**ESTIMATED ECONOMIC IMPACTS OF THE CATTLE  
RANCHING AND FARMING SECTOR ON THE WHITE PINE  
COUNTY ECONOMY**

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COUNTY ECONOMY**

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White Pine County Economy.**

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# **ESTIMATED ECONOMIC IMPACTS OF THE CATTLE RANCHING AND FARMING SECTOR ON THE WHITE PINE COUNTY ECONOMY**

## **EXECUTIVE SUMMARY**

The University Center for Economic Development completed an analysis of the economic importance of the Cattle Ranching and Farming Sector on the White Pine County economy. The results of this study can be used as background material for public lands management policies and value added agricultural economic development plans.

### **Concepts of Economic Multipliers: Income and Economic Multipliers**

- Export sales bring dollars to the county economy which provides for future economic growth.
- Import sales act as leakages from the county economy.
- Changes in economic activity by the Cattle Ranching and Farming Sector will impact the economic activity of the White Pine County economy.
- A measure of the economic effects of the changes in the White Pine County economy from changes in economic activity by the Cattle Ranching and Farming Sector is called the multiplier effect.
- To derive these multiplier effects and county level sectoral output, employment, and labor income levels, the U.S. Forest Service input-output model IMPLAN was used.

### **Sectoral Values of Output, Employment, and Labor Income.**

- In 2001, there were eighty-eight (88) economic sectors in the White Pine County economy.
- In 2001, the Cattle Ranching and Farming Sector in White Pine County recorded a value of output of \$8.183 million which was 3.04% of total county value of output. This ranks the Cattle Ranching and Farming Sector seventh in value of output of White Pine County's eighty-eight (88) economic sectors.
- In 2001, the Cattle Ranching and Farming Sector in White Pine County had 106 employees which was 2.76% of total White Pine County employment. This ranks the Cattle Ranching and Farming Sector eighth among White Pine County's eighty-eight (88) economic sectors in sectoral employment.

- Sectoral labor income is the summation of sectoral employee compensation and proprietor income.
- In 2001, the Cattle Ranching and Farming Sector in White Pine County had labor income of \$1.777 million which was 1.43% of total White Pine County labor income. This ranks the Cattle Ranching and Farming Sector fifteenth among White Pine County's eighty eight (88) economic sectors in labor income.

### **Sectoral Value of Exports and Imports**

- Export sales bring dollars into the county economy for future economic growth. Economic development activities to assist exporting sectors are called export enhancement economic development activities.
- Imports are leakages outside the county economy and as such reduce future economic development growth. Economic development activities to reduce imports are called import substitution economic development activities.
- In 2001, the Cattle Ranching and Farming Sector in White Pine County had export sales of \$6.677 million which was 8.20% of total White Pine County exports. This ranks the Cattle Ranching and Farming Sector, second highest in export sales of White Pine County's eighty-eight (88) economic sectors. This shows the importance of the Cattle Ranching and Farming Sector as a basic economic sector in White Pine County.
- In 2001, the Cattle Ranching and Farming Sector in White Pine County had only \$0.048 million in imports which was 0.01% of total county imports. This ranks the Cattle Ranching and Farming Sector 351<sup>st</sup> of White Pine County's 477 importing commodities.
- In 2001 in White Pine County, there were \$174.457 million more in imports than exports. However the Cattle Ranching and Farming Sector being second highest in exports sales has been a positive sectoral influence in White Pine County's balance of trade.

### **Sectoral Location Quotients**

- Location quotients are an analytical tool used by regional economists to estimate the economic base of an economy.
- Location quotients measure the degree of concentration of White Pine County economic sectors.
- A location quotient greater than 1.25 indicates an exporting sector or a sector that is part of White Pine County's economic base.

- The Cattle Ranching and Farming Sector in White Pine County ranked tenth in sectoral location quotient value.
- The location quotient value of 5.14 signifies that the Cattle Ranching and Farming Sector is a major contributor to the economic base of White Pine County.

### **Inter-industry Analysis**

- Inter-industry or input-output analysis shows the economic interactions and linkages between sectors in the White Pine County economy.
- The IMPLAN (Minnesota IMPLAN Group, Inc. 2000) microcomputer input-output software was used to derive the economic, employment, and labor income impacts of the Cattle Ranching and Farming Sector.
- In 2001, the Cattle Ranching and Farming Sector in White Pine County had a value of production level of \$8.183 million, hired 106 employees, and paid labor income of \$1.777 million.
- Given the economic inter-linkage and multiplier effect, total output impacts to the White Pine County economy from activities by the Cattle Ranching and Farming Sector was \$14.172 million. Total employment and labor income impacts in the White Pine County economy from activity of the Cattle Ranching and Farming Sector was 189 jobs and \$3.224 million in labor income.
- Given the economic linkages of the Cattle Ranching and Farming Sector, any changes in production levels by the Cattle Ranching and Farming Sector due to drought, rangeland fires, or public land management policies greatly impacts the White Pine County economy.

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## **Introduction**

The Cattle Ranching and Farm Sector is one of the most important sectors in the White Pine County economy. As an export industry, the Cattle Ranching and Farming Sector bring dollars into the county economy which are used for further economic growth and development in White Pine County. The primary objective of this bulletin is to estimate the economic impacts of the local Cattle Ranching and Farming Sector on the economy of White Pine County. Specifically the paper will be split into three parts:

- (1) Part I will discuss concepts of multipliers in a county economy,
- (2) Part II will analyze the economic base of the White Pine County economy,  
and
- (3) Part III will employ input-output model procedures to estimate the economic linkages of the Cattle Ranching and Farming Sector on the White Pine County economy.

### **Some Basic Concepts of County Economics and Income and Employment Multipliers**

Figure 1 illustrates the major dollar flows of goods and services in any economy. The foundation of a county's economy is those businesses which sell some or all of their goods and services to buyers outside of the county. Such a business is a basic industry. The flow of products out of, and dollars into, a county is represented by the two arrows in the upper right portion of Figure 1. To produce these goods and services for "export" outside the county, the basic industry purchases inputs from outside of the county (upper left portion of Figure 1), labor from the residents or "households" of the county (left side of Figure 1), and inputs from service industries located within the county (right side of Figure 1), and inputs from service industries located within the county (right side of Figure 1). The flow of labor, goods and services in the county is completed by households using their earnings to purchased goods and services from the county's service industries (bottom of Figure 1). It is evident from the interrelationships illustrated

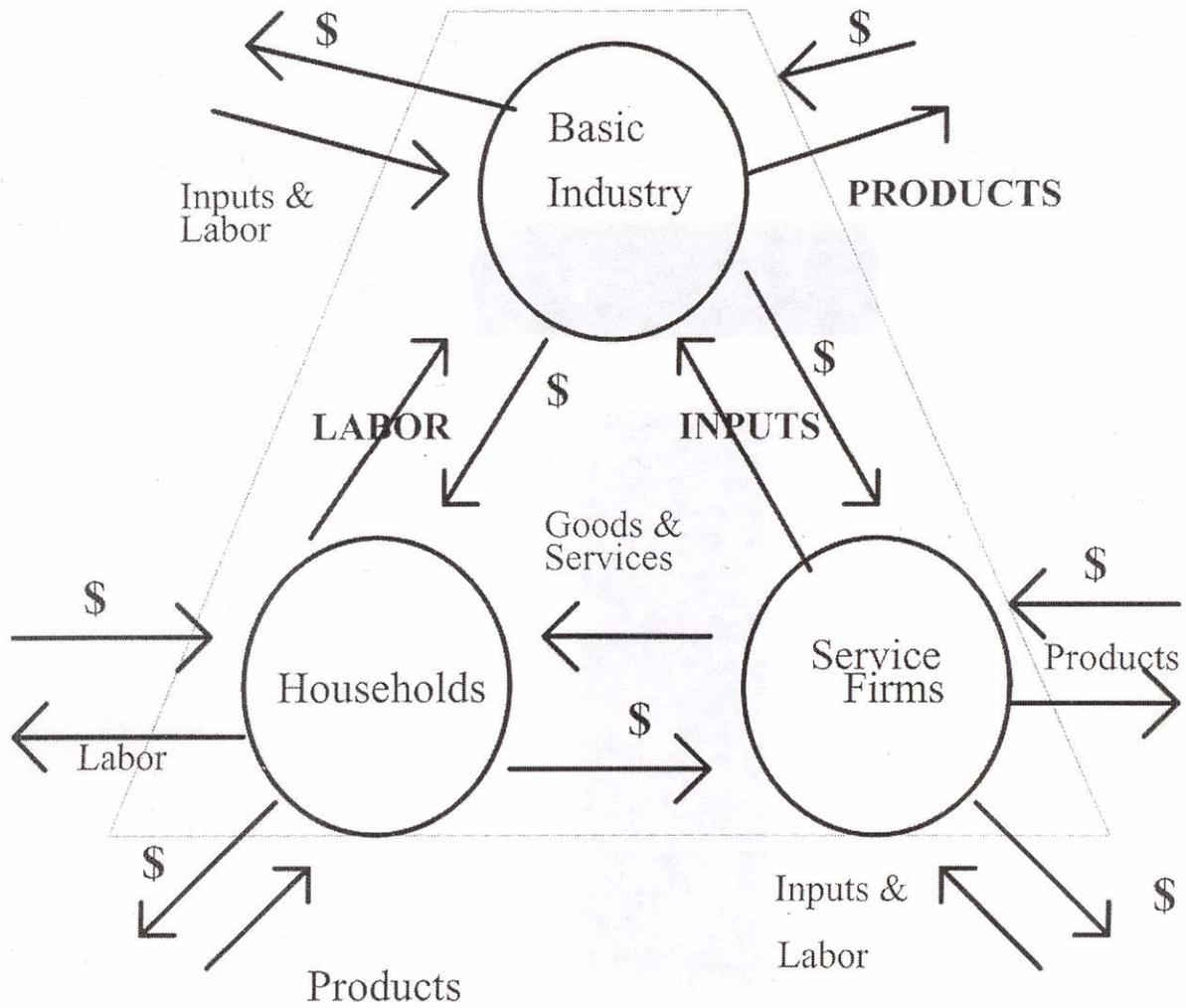
in Figure 1 that a change in any one segment of a county's economy will have reverberations throughout the entire economic system of the county.

Consider, for instance, the Cattle Ranching and Farming Sector, and its impacts on the local economy. The Cattle, Ranching and Farming Sector's activities can be considered a basic industry as it draws dollars from outside the area. These dollars may hire a few people from the household sector such as laborers to herd the livestock. However, most of the local economic linkages are from the Cattle Ranching and Farming Sector's purchasing goods from the service sectors. These include businesses such as restaurants, gas stations, hotels and other retail businesses. As earnings increase in these businesses, they will hire additional people and buy more inputs from other businesses. Thus the change in the economic base works its way throughout the entire local economy.

The total impact of a change in the economy consists of direct, indirect and induced impacts. Direct impacts are the changes in the activities of the impacting industry, such as the reduction of operations by the Cattle Ranching and Farming Sector. The impacting business, such as the Cattle Ranching and Farming Sector, changes its purchases of inputs as a result of the direct impact. This produces an indirect impact in the business sectors. Both the direct and indirect impacts change the flow of dollars to the community's households. The local households alter their consumption accordingly. The effect of this change in local household consumption upon businesses in a county is referred to as an induced impact.

A measure is needed that yields the effects created by an increase or decrease in economic activity. In economics, this measure is called the multiplier effect.

Figure 1: Overview of Community Economic System



## **Analysis of White Pine County Economic Data**

Using the IMPLAN input-output model database (Minnesota IMPLAN Group, Inc., 2000), the top twenty sectors in value of output, employment, and labor income are shown in tables 1 through 3. Tables 4 and 5 show the top twenty sectoral values of export and import levels which provide an indication of sectoral contribution to the White Pine County economic base. Sectoral location quotient values show which sectors are importers, self-sufficient, and exporters. Table 6 shows these sector location quotient values.

### **Sectoral Value of Output, Employment, and Labor Income**

In 2001, there were eight-eight (88) economic sectors in White Pine County. Table 1 shows the top twenty economic sectors by value of output for White Pine County. These twenty sectors made up approximately 76% of total White Pine County output in 2001. The Cattle Ranching and Farming Sector in White Pine County recorded a value of output of \$8.183 million which was 3.04% of total county value of output. This output level ranks the Cattle Ranching and Farming Sector as the seventh largest of White Pine County's eighty-eight (88) economic sectors in sectoral value of production.

Table 2 shows the top twenty White Pine County economic sectors by levels of employment for 2001. These top twenty employment sectors made up approximately 77 percent of total White Pine County employment in 2001. The Cattle Ranching and Farming Sector in White Pine County in 2001 had 106 employees which were 2.76% of total White Pine County employment. This employment level ranks the Cattle Ranching and Family Sector eighth among White Pine County's eighty-eight (88) economic Sectors as to level of sectoral employment

Table 1. Top Twenty Economic Sectors by Values of Output for White Pine County,  
2001

SECTOR	OUTPUT (\$1,000,000)	PERCENTAGE TOTAL OUTPUT (%)
State & Local Non-Education	57.493	21.38%
Owner-occupied dwellings	15.189	5.65%
Federal Non-Military	14.232	5.29%
Gold, silver, and other metal ore mining	13.757	5.12%
Power generation and supply	11.94	4.44%
Automotive repair and maintenance, except car wash	10.176	3.78%
Cattle ranching and farming	8.183	3.04%
New residential 1-unit structures, nonfarm	8.055	3.00%
Hotels and motels, including casino hotels	7.566	2.81%
Monetary authorities and depository credit intermediaries	7.093	2.64%
Real estate	7.076	2.63%
Food services and drinking places	6.514	2.42%
Copper, nickel, lead, and zinc mining	5.206	1.94%
Offices of physicians, dentists, and other health	4.978	1.85%
Commercial and institutional buildings	4.81	1.79%
All other crop farming	4.746	1.76%
Food and beverage stores	4.597	1.71%
Nonstore retailers	4.123	1.53%
Nursing and residential care facilities	4.108	1.53%
Wholesale trade	3.787	1.41%

Table 2. Top Twenty Economic Sectors by Employment for White Pine County, 2001

SECTOR	EMPLOYMENT (numbers)	PERCENTAGE TOTAL EMPLOYMENT (%)
State & Local Non-Education	1,017	26.50%
Federal Non-Military	219	5.71%
Food services and drinking places	209	5.45%
Hotels and motels, including casino hotels	185	4.82%
Nursing and residential care facilities	118	3.07%
Nonstore retailers	116	3.02%
Power generation and supply	108	2.81%
Cattle ranching and farming	106	2.76%
Food and beverage stores	92	2.40%
Gasoline stations	91	2.37%
Real estate	89	2.32%
Offices of physicians, dentists, and other health	89	2.32%
Automotive repair and maintenance, except car wash	84	2.19%
New residential 1-unit structures, nonfarm	71	1.85%
State & Local Education	71	1.85%
All other crop farming	68	1.77%
Commercial and institutional buildings	65	1.69%
Gold, silver, and other metal ore mining	53	1.38%
Wholesale trade	53	1.38%

Table 3 shows the top twenty economic sectors in White Pine County by levels of labor income. Sectoral labor income is the summation of sectoral employee compensation and proprietor income. From table 3, the top twenty of the eighty-eight (88) economic sectors in White Pine County accounted for approximately 81.3% of total White Pine County labor income. The Cattle Ranching and Farming Sector in White Pine County in 2001 had labor income of \$1.777 million which was 1.43% of total White Pine County labor income. This sector's labor income level ranks the Cattle Ranching and Farming Sector as fifteenth among White Pine County's eighty-eight (88) economic sectors as to labor income.

Table 3. Top Twenty Economic Sectors by Labor Income for  
White Pine County, 2001

SECTOR	Employment Compensation (\$1,000,000)	Proprietor Income (\$1,000,000)	Labor Income (\$1,000,000)	Percentage Total Labor Income (%)
State & Local Non-Education	49.02	0	49.02	39.35%
Federal Non-Military	12.134	0	12.134	9.74%
Gold, silver, and other metal ore mining	3.869	0.371	4.24	3.40%
Hotels and motels, including casino hotels	3.179	0.129	3.308	2.66%
Offices of physicians, dentists, and other health	2.635	0.352	2.987	2.40%
Power generation and supply	2.55	0.276	2.826	2.27%
State & Local Education	2.58	0	2.58	2.07%
Nursing and residential care facilities	2.281	0.07	2.351	1.89%
Food services and drinking places	1.789	0.513	2.302	1.85%
New residential 1-unit structures, nonfarm	1.808	0.374	2.182	1.75%
Food and beverage stores	1.875	0.128	2.003	1.61%
Automotive repair and maintenance, except car wash	1.527	0.465	1.992	1.60%
Commercial and institutional buildings	1.646	0.339	1.985	1.59%
Other Federal Government enterprises	1.914	0	1.914	1.54%
Cattle ranching and farming	1.168	0.609	1.777	1.43%
Copper, nickel, lead, and zinc mining	1.623	0.103	1.726	1.39%
Insurance carriers	1.545	0.117	1.662	1.33%
Monetary authorities and depository credit interme	1.379	0.11	1.489	1.20%
Motor vehicle and parts dealers	1.317	0.08	1.397	1.12%
Nonstore retailers	1.241	0.153	1.394	1.12%

As tables 1 through 3 shows, the Cattle Ranching and Farming Sector play an important role in the entire White Pine County economy. The next step is to estimate sectoral importance to the county's economic base. Sectoral value of exports and imports, and location quotient values will be used to estimate individual sectoral contribution to county economic base.

### **Sectoral Value of Exports and Imports**

As shown in figure 1, export sales bring dollars into a county economy which provide growth for future economic expansions. Imports however are seen as leakages from county economies and as such reduce future economic growth. Economic development activities which expand exports are called export enhancement while reduction of imports are referred to as import substitution activities.

Table 4 shows the top twenty economic sectors in White Pine County by value of exports. From table 4, these top twenty of eight-eight (88) economic sectors in White Pine County account for approximately 85.7% of total White Pine County export value. Of interest, note that the top two exporting economic sectors are the Gold, Silver, and other Metal Ore Mining Sector and the Cattle Ranching and Farming Sector. These two natural resource industries provide the base for economic growth in White Pine County by their level of export. The Cattle Ranging and Farming Sector in White Pine County in 2001 had exports of \$6.677 million which were 8.20% of total White Pine County value of exports. This export level ranks the Cattle Ranching and Farming Sector in White Pine County second among White Pine County's eighty-eight (88) economic sectors.

Table 4. Top Twenty Economic Sectors by Value of Export  
 For White Pine County, 2001.

SECTORS	TOTAL EXPORTS (\$1,000,000)	PERCENTAGE TOTAL EXPORTS (%)
Gold- silver- and other metal ore mining	11.81707	14.52%
Cattle ranching and farming	6.67733	8.20%
Hotels and motels- including casino hotels	6.41845	7.89%
Power generation and supply	5.89936	7.25%
Automotive repair and maintenance- except car wash	5.61597	6.90%
Owner-occupied dwellings	5.16838	6.35%
Copper- nickel- lead- and zinc mining	4.90870	6.03%
All other crop farming	3.14283	3.86%
Nonstore retailers	2.57884	3.17%
Rest of the world adjustment to final uses	2.31343	2.84%
Gasoline stations	2.27727	2.80%
Monetary authorities and depository credit intermediaries	2.02579	2.49%
Ready-mix concrete manufacturing	1.85575	2.28%
Nursing and residential care facilities	1.73287	2.13%
Waste management and remediation services	1.40996	1.73%
Couriers and messengers	1.33866	1.64%
Other Federal Government enterprises	1.22236	1.50%
Other amusement- gambling- and recreation industries	1.15802	1.42%
Insurance carriers	1.11488	1.37%
Food and beverage stores	1.05810	1.30%

Table 5 shows the top twenty economic sectors in White Pine County by value of imports. From table 5, these top twenty economic sectors in White Pine County account for approximately 47.3% of total White Pine County value of imports. The Wholesale Sector and the Hospital Sector were the largest importers accounting for approximately 11% of total county imports. The Cattle Ranching and Farming Sector had only \$0.048 million in imports which was 0.01% of total imports to White Pine County. This input level ranks the Cattle Ranching and Farming Sector 351<sup>st</sup> of White Pine County's 477 importing commodities.

Comparing sectoral exports and imports provides information as to basic sectors in a county economy. In 2001, total value of exports in White Pine County was \$81.383 million while value of imports to White Pine County was \$255.840 million. These figures show that in 2001 the value of imports for White Pine County were \$174.457 million more than value of exports. This produces a balance of trade imbalance for White Pine County.

However, the Cattle Ranching and Farming Sector, being the second largest exporter in the county, provides an economic base for future economic growth in White Pine County. Also, value of exports for the Cattle Ranching and Farming Sector were \$6.629 million greater than sectoral value of imports. The Cattle Ranching and Farming Sector by its export sales contributes substantially to White Pine County's balance of payments. This shows the importance of the Cattle Ranching and Farming Sector that may be lost if only sectoral value of output, employment, and labor income are analyzed.

Table 5. Top Twenty Economic Sectors by Value of Imports for White Pine County, 2001

SECTORS	TOTAL IMPORTS (\$1,000,000)	PERCENTAGE TOTAL IMPORTS (%)
Wholesale trade	14.65941	5.73%
Hospitals	12.69985	4.96%
Noncomparable imports	11.47077	4.48%
Other new construction	7.76263	3.03%
Custom computer programming services	6.52289	2.55%
Real estate	6.40074	2.50%
Aircraft manufacturing	6.29240	2.46%
Automobile and light truck manufacturing	6.06116	2.37%
Search- detection- and navigation instruments	5.15000	2.01%
Ship building and repairing	5.01973	1.96%
Owner-occupied dwellings	4.99147	1.95%
Petroleum refineries	4.71158	1.84%
Telecommunications	4.65692	1.82%
Metal valve manufacturing	4.46374	1.74%
Insurance carriers	3.61570	1.41%
Monetary authorities and depository credit interme	3.59969	1.41%
Computer systems design services	3.49813	1.37%
Offices of physicians- dentists- and other health	3.42995	1.34%
Guided missile and space vehicle manufacturing	3.04462	1.19%
Electronic computer manufacturing	3.02890	1.18%

### Location Quotient Analysis

The economic base of a county refers to the relative size of its economic sectors. A county is said to have a diversified economic base if several economic sectors are relatively large. Conversely, if one or a few economic sectors dominate a local economy, the economy is said to have a concentrated economic base. One analytical regional economics technique to measure economic base is location quotients.

The degrees of concentration of White Pine County economic sectors are determined by calculating location quotients for individual economic sectors. Location quotients indicate the economic importance of each county economic sector relative to the same economic sector at the national level. Location quotients usually use employment as an indicator of an industry's size and importance. The primary focus of location quotients is to identify the economic sectors that are either more important or less important statewide or locally than nationally. The broader the economic base, that is, the higher the location quotients, the more stable the economy of a county. On the other hand, very low location quotients represent economic sectors that are largely underdeveloped and may offer an opportunity for future development.

An economic sector's location quotient is the ratio of the sector's share of employment in the county to the sector's share of employment in the nation. It is calculated as follows:

$$LQ_i = \frac{e_i / E}{n_i / N}$$

Where:

$i$  = Economic Sector

$LQ_i$  = Location quotient for economic sector  $i$

$e_i$  = County employment in economic sector  $i$

$E$  = Total county employment

$n_i$  = National employment in economic sector  $i$

$N$  = Total national employment

The interpretation of location quotients is as follows:

1. Every sector's output can be divided into two uses: export and local consumption (use).
2. The amount consumed (used) by a community is proportionate to the amount consumed nationally.
3. If the location quotient for an economic sector is less than one, goods and services must be imported to satisfy local demands.
4. If the location quotient for an economic sector is equal to one, then the economy is approximately fulfilling the requirements of the local households and firms.
5. Finally, if the location quotient is greater than 1.25 for a particular sector, the county is an exporting sector. A self-sufficient economic sector is designated by a location quotient value between 0.75 and 1.25 for a selected county. Finally an importing economic sector is designated by a location quotient less than 0.75 for a selected state or county.

Table 6 lists the top twenty economics sectors in White Pine County by their location quotient values. The Cattle Ranching and Farming Sector ranked tenth among White Pine County's eighty-eight (88) sectors. The location quotient value of 5.14 for the Cattle Ranching and Farming Sector indicates that this sector is a major economic base sector for White Pine County and brings dollars into the county for future economic growth and development.

Table 6. Top Twenty Economic Sectors by Location  
 Quotient Value for White Pine County, 2001

	Industry Sector	Location Quotient
23	Gold, silver, and other metal ore mining	141.5490
22	Copper, nickel, lead, and zinc mining	131.6121
30	Power generation and supply	11.2495
10	All other crop farming	10.5478
479	Hotels and motels, including casino hotels	6.5341
192	Ready-mix concrete manufacturing	5.9202
504	State & Local Non-Education	5.7613
496	Other Federal Government enterprises	5.5251
506	Federal Non-Military	5.2746
11	Cattle ranching and farming	5.1405
475	Museums, historical sites, zoos, and parks	4.8351
477	Bowling centers	4.7150
407	Gasoline stations	4.0939
445	Environmental and other technical consulting services	3.9250
25	Sand, gravel, clay, and refractory mining	3.3993
223	Nonferrous foundries, except aluminum	3.3167
166	Toilet preparation manufacturing	3.1598
412	Nonstore retailers	2.8347
13	Animal production, except cattle and poultry and	2.5462
24	Stone mining and quarrying	2.4069

## **Inter-Industry Analyses**

Within a county economy, there are numerous economic sectors performing different tasks. All sectors are dependent upon each other to some degree. A change in economic activity by one sector will impact either directly or indirectly the activity and viability of other sectors in the economy. In order to show these interdependencies and interventions between economic sectors, a county-wide input–output model can be used.

Input-output models derive the linkages and multipliers for economic sectors in an economy. For this analysis, the microcomputer input-output model, IMPLAN (Minnesota IMPLAN Group, Inc., 2000), was used to derive economic linkages for White Pine County. For this analysis, the economic, employment, and labor income impacts of the Cattle Ranching and Farming Sector on the White Pine County economy were estimated. Table 7 shows the impacts of the activities by the Cattle Ranching and Farming Sector on the White Pine County economy.

From Table 7, the Cattle Ranching and Farming Sector for White Pine County in 2001 had a production level of \$8.183 million, hired 106 employees, and paid labor income of \$1.777 million. Given the multiplier impacts, the Cattle Ranching and Farming Sector in White Pine County had total economic impacts of \$14.172 million in 2001. This means that beyond the direct economic benefits of \$8.183 million, the indirect and induced impacts of the Cattle Ranching and Farm Sector on the White Pine County economy were \$5.989 million. Indirect impacts are the additional expenditures between economic sectors after the initial direct expenditure is made. Induced impacts are the additional expenditures and economic activity attributable to household sector interactions.

Also from table 7, the Cattle Ranching and Farming Sector had total employment and labor income impacts of 189 jobs and \$3.224 million, respectively. This means that due to the economic linkages of the Ranch Cattle and Farming Sector an additional 83 jobs and \$1.447 million in labor income was created in White Pine County from indirect and induced linkages

Table 7. Economic, Employment, and Labor Income Impacts of the Cattle Ranching and Farming Sector on the White Pine County Economy, 2001

Categorical of Impacts	Direct Effects	Indirect and Induced Effects	Total Effects
Economic*	\$8.183	\$5.989	\$14.172
Employment	106	83	189
Labor Income*	\$1.777	\$1.447	\$3.224

Reported in Millions of Dollars\*

## Conclusions

The primary objective of this paper was to investigate the economic impacts of the Cattle Ranching and Farming Sector on the White Pine County economy. Results of this analysis showed that by value of output, employment and labor income, the Cattle Ranching and Farming Sector was one of the top twenty sectors in the White Pine County economy.

However the value and ranking of sectoral output, employment, and labor income does not by itself tell one of the importance of an economic sector. Another view of the importance of an economic sector to a county economy is the sector's contribution to economic base. Economic base or basic sectors are those economic sectors that export to economies outside the county boundary. These sectors bring dollars into the local economy for further and future economic development. The Cattle Ranching and Farming Sector ranked second among the eight-eight (88) economic sectors in White Pine County in value of export. This export value is an indication of the importance of the Cattle Ranching and Farming Sector to future economic development in White Pine County.

Another statistic to estimate sectoral economic base in a county's economy is location quotients. Location quotients indicate exporting sectors. If sector's location quotient value is above 1.25, the sector is designated as an exporting sector. In 2001, the Cattle Ranching and Farming Sector had a location quotation value of 5.14 indicating this sector was an exporting sector. Also the location quotient indicates that the Cattle Ranching and Farming Sector is an important economic base sector to the White Pine County economy.

Lastly, a county-wide White Pine County input-output model was used to derive the economic, employment, and labor income impacts of the Cattle Ranching and Farming Sector on the White Pine County economy. In 2001, the direct output, employment, and labor income impacts on the White Pine County were \$8.183 million, 106 jobs, and \$1.777 million, respectively. Including the multiplier effects and economic linkages of the Cattle Ranching and Farming Sector on the White Pine County economy, total output, employment, and labor income effects of the Cattle Ranching and Farm

Sector or the White Pine County economy are estimated to be \$14.172 million, 189 jobs, and \$3.224 million, respectively.

Results of this study have shown the importance of the Cattle Ranching and Farming Sector on the White Pine County economy. Not only is sectoral output, employment, and labor income important but the degree that the Cattle Ranching and Farming Sector participate in the economic base of White Pine County is of equal or greater importance. Also the degree of economic linkages the Cattle Ranching and Farming Sector has on the White Pine County economy is critical. The county input-output model analysis showed that the economic, employment, and labor income linkages and impacts of the Cattle Ranching and Farming Sector go beyond its own sector. The changes in economic activity by the Cattle Ranching and Farming Sector in White Pine County from weather, cattle prices, or public land management will greatly impact the economy and other sectors in the White Pine County economy.

## References

Minnesota IMPLAN Group Inc. IMPLAN Pro: User's Guide Minnesota IMPLAN Group, Inc.: Stillwater, Minnesota, 2000.